J. ROSE.

DOUCHE NOZZLE.

APPLICATION FILED MAR. 20, 1918. RENEWED MAR. 22, 1922.

1,434,964. Patented Nov. 7, 1922.

4 SHEETS—SHEET 1.

Fig. 1.

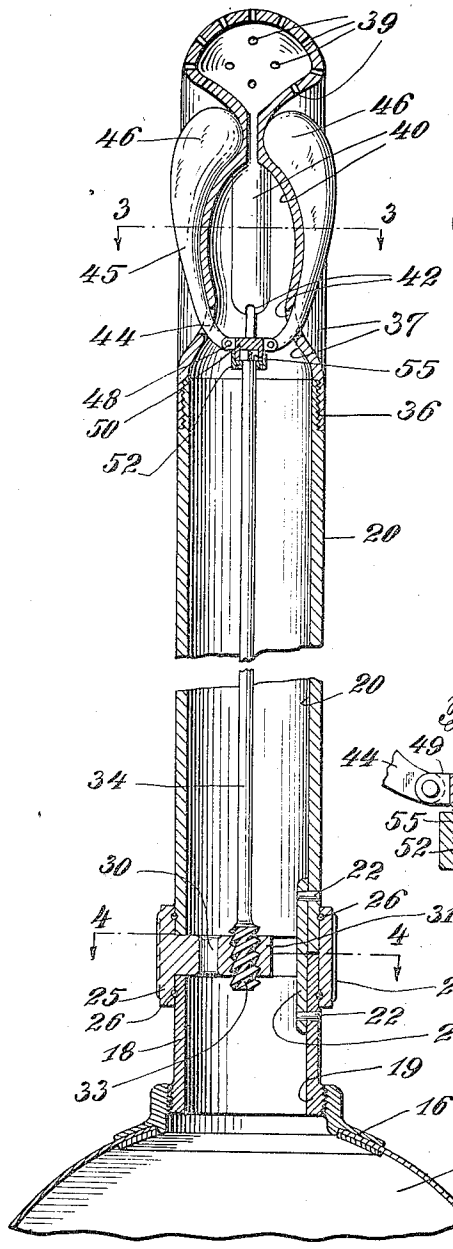
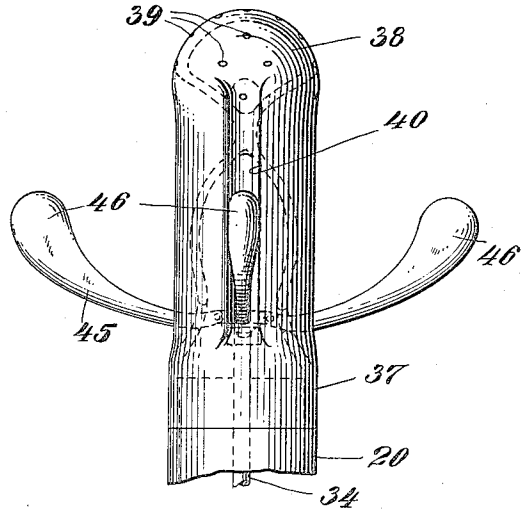


Fig. 2.



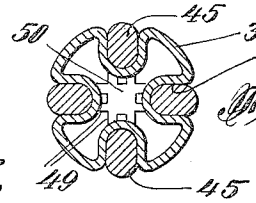
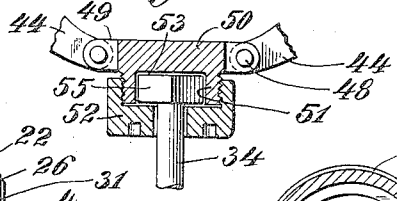


Fig. 3.

Fig. 5.



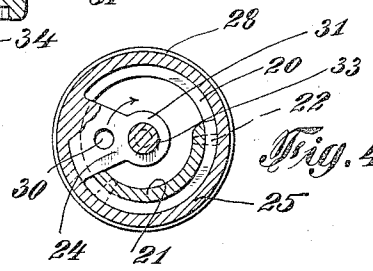


Fig. 4.

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4 SHEETS—SHEET 2.

Fig. 6.

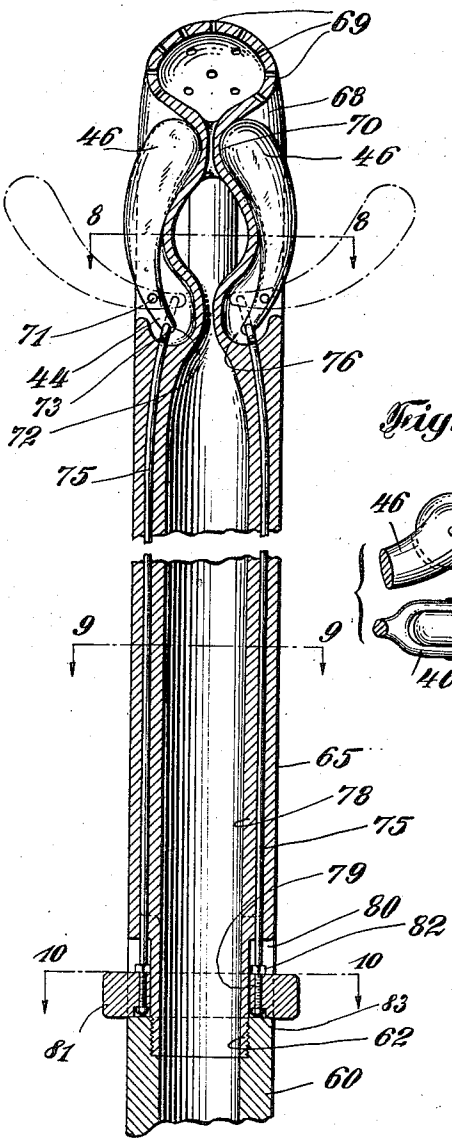


Fig. 7.

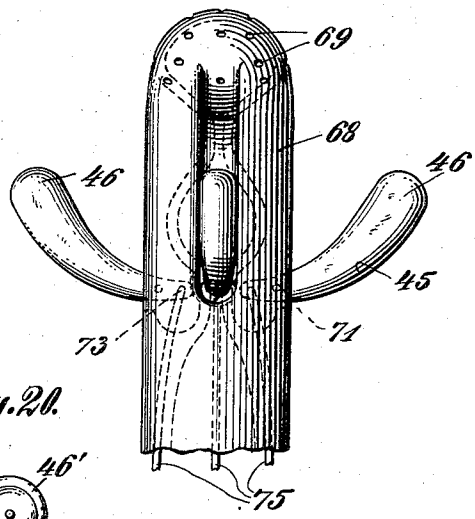


Fig. 20.

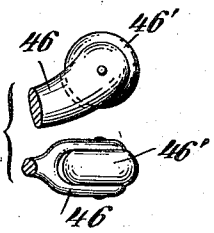


Fig. 8.

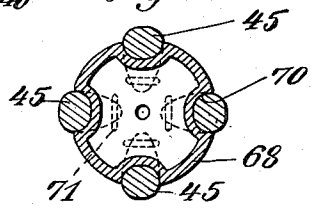
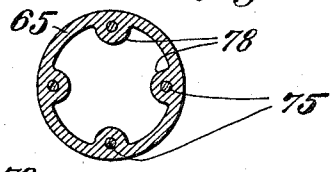


Fig. 9.



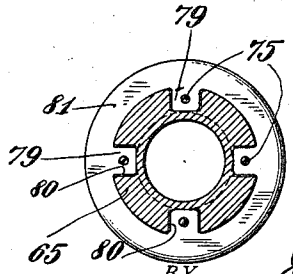


Fig. 10.

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4 SHEETS—SHEET 3.

Fig. 12

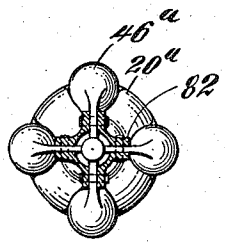
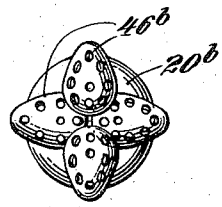


Fig. 14.



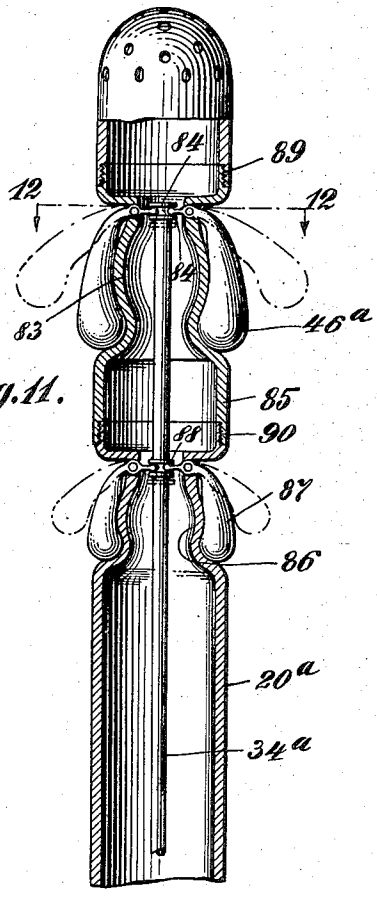


Fig. 11.

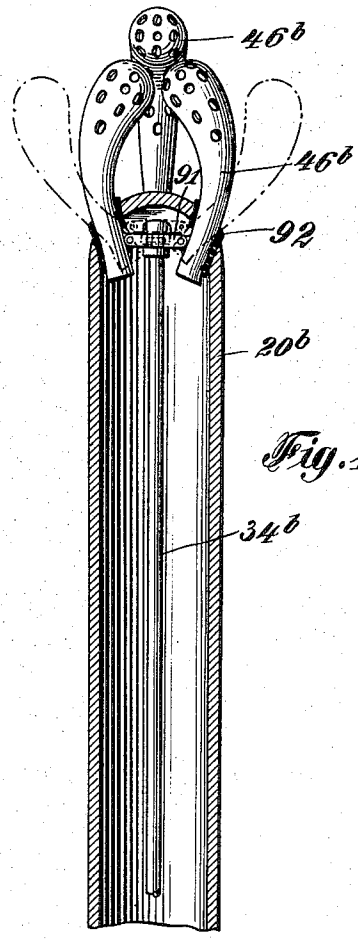


Fig. 13.

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4 SHEETS—SHEET 4.

Fig. 16.

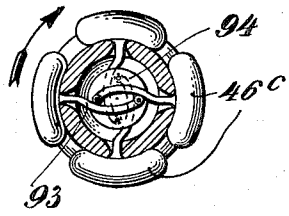
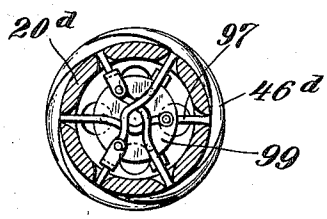


Fig. 18.



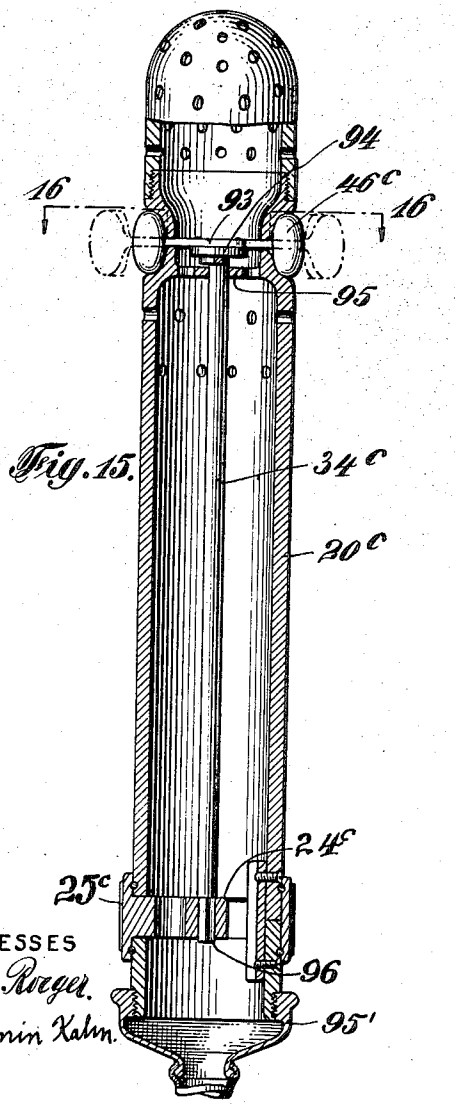


Fig. 15.

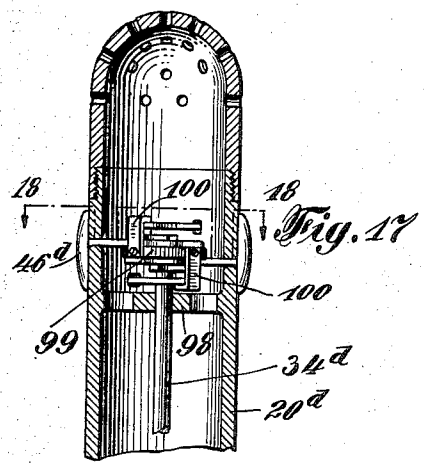
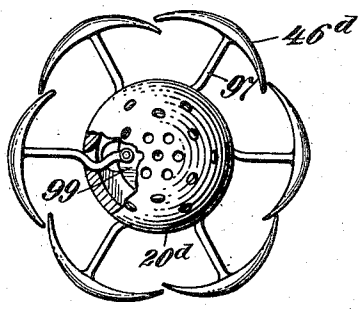


Fig. 17

Fig. 19.



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Patented Nov. 7, 1922. 1,434,964

UNITED STATES PATENT OFFICE.

JAY ROSE, OF BROOKLYN, NEW YORK, ASSIGNOR TO DILATOR SYRINGE CORPORATION, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

DOUCHE NOZZLE.

Application filed March 20, 1918, Serial No. 223,493. Renewed March 22, 1922. Serial No. 545,901.

To all whom it may concern:

Be it known that I, JAY ROSE, a citizen of the United States, residing at No. 729 Halsey Street, Brooklyn, in the county of Kings, State of New York, have invented certain new and useful Improvements in Douche Nozzles; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in douche nozzles, such as are used chiefly in cleansing and irrigating, or in conveying liquid medications to the internal parts of the vaginal cavity.

The interior structure of this cavity is such that jets, streams or sprays from ordinary nozzles act merely superficially, and, regardless of the force used, fail to reach the interstices formed by the sinuous folds or convolutions of the overlapping membranes which constitute its enveloping walls.

It is essential when irrigating this cavity that the entire interior tract surfaces be subjected to treatment, preferably in an easy, safe and convenient manner, without discomfort or pain, a condition, which, so far as is known, has never been satisfactorily met.

Due to the peculiar construction and disposition of these flexible and pliable membranic walls they are readily dilated or distended and instruments for such purposes are in use by surgeons but so far as I am aware, no device is commercially known that may be freely used in safety by the individual herself.

The principal object of this invention is to provide a douche nozzle which fulfills the foregoing conditions, effectually and painlessly expanding the vaginal cavity, loosening the folds of the membranes to such an extent that liquid supplied by the device is brought into intimate contact with the surfaces, thoroughly flushing the same.

A further object is to provide a douche which can be safely used even by inexperienced persons, the operations of insertion and expansion being of the most simple and elementary nature.

A further object of the invention is to provide a nozzle which will allow an easy and continuous outflow of the water or other liquid discharged through the nozzle so that the force of the discharge and the consequent cleansing effect will not be impaired.

Still another object is to provide such nozzles in forms which may be thoroughly cleansed and rendered antiseptic, and which, due to the simplicity of construction, can be manufactured at a moderate cost.

In the accompanying drawings I have illustrated two different forms of nozzles constructed in accordance with the principles of the invention, and in the said drawings,

Figure 1 is a longitudinal sectional view taken substantially through the center of a douche provided with a nozzle, made in accordance with the invention, the dilators being shown in a folded position;

Fig. 2 is a fragmentary side elevational view of the same, the dilators being shown extended;

Fig. 3 is a transverse sectional view, taken on line 3—3 of Figure 1;

Fig. 4 is a similar transverse sectional view, taken on line 4—4 of Fig. 1;

Fig. 5 is an enlarged fragmentary sectional view, showing the dilator joints;

Fig. 6 is a longitudinal sectional view showing a modified form of the appliance;

Fig. 7 is a fragmentary side elevational view of the same;

Fig. 8 is a transverse sectional view taken on line 8—8 of Fig. 6;

Fig. 9 is a similar sectional view taken on line 9—9 of Fig. 6;

Fig. 10 is a transverse sectional view taken on line 10—10 of Fig. 6;

Fig. 11 is a longitudinal sectional view of a further modified form of the nozzle;

Fig. 12 is a transverse sectional view on line 12—12 of Fig. 11;

Fig. 13 is a longitudinal sectional view of a further modified form of the nozzle;

Fig. 14 is an end view of the nozzle shown in Fig. 13;

Fig. 15 is a longitudinal sectional view of a further modified form of the nozzle;

Fig. 16 is a transverse sectional view on line 16—16 of Fig. 15;

Fig. 17 is a longitudinal section view of a further modified form of the nozzle;

Fig. 18 is a transverse sectional view on line 18—18 of Fig. 17;

Fig. 19 is an end view of the nozzle shown in Fig. 17; and

Fig. 20 is a detail view of a modified form of arm which may be used with any of the various designs.

Referring to the drawings, which are to be regarded as typical or illustrative only, and not as limiting the scope of the invention to the structural details shown, the numeral 15 indicates a conventional type of compressible, liquid supplying bulb, joined by an annular flange 16, having an interior screw thread to the nozzle which, as shown in Figs. 1 and 2 is comprised of several distinct parts, the lower or base 18 having a thread 19 fitting the thread of the flange 16 and serving as a fluid-connection from the bulb 15.

This base section is joined to the cylindrical tubular sheath or shank-portion 20, by an interior curved plate 21 extending through somewhat less than one half the circumference, and secured by rivets 22 or like fastenings.

The adjacent ends of the elements 18 and 20 are recessed opposite the plate 21, and rotatable within the recess is a segmental block 24 which extends outwardly through the recess and has joined to it a band 25, closely encircling the adjacent edges of the sections, packing rings 26 being preferably placed between the band and the two sections to prevent leakage. The exterior of the band or ring is preferably corrugated or knurled, as indicated at 28, to facilitate its operation.

The hub or boss 31 of the segment 24 projects inwardly from the segment to the center of the barrel and contains a coarse pitched, screw threaded opening in which works a corresponding screw 33, formed at the lower end of a rod 34, which extends centrally through the barrel.

An inward extension 37, 38 is secured to the shank-portion 20 in any approved manner as by screw threads 36. The part 37 of this inward extension is constricted in cross-section, in the embodiment illustrated by the formation of deep narrow recesses or pockets 40 in a manner capable of housing the dilators substantially within an area approximating the outer dimensions of the shank-portion 20. The extreme inner end of this inward extension is a cervix-protecting bulbous enlargement 38. Fluid discharge openings such as the perforations 39 are provided in the walls of this inward extension which itself serves as a fluid-duct for the discharge of fluid against the dilated walls of the organ to be irrigated.

Through the openings 42 extend the smaller, inner ends 44, of the dilators 45, each of which consists of a curved, tapering shank and a bulbous head 46, of substantially elliptical cross section, having highly finished surfaces and shaped to closely fit within the recesses 40 when in a folded position.

Thus the dilators are grouped about the inward extension where it is of constricted cross-section so that when contracted they will not materially add to the bulkiness of the nozzle at the time of insertion and so that the smooth bulbous enlargement 38 forming the extreme inner end of the inner extension will serve as a shield protecting the cervix against any pinching by the dilators 45.

The lower inner ends of the dilators 44 are pivotally engaged by pins 48 passing through the arms 49 of a spider 50, formed with a depending hub 51, screw threaded upon its exterior and engaged by a crown nut 52. A recess 53 is formed in the hub 51, into which the squared head 55 of the rod 34 fits and is held against rotation, the head being held in place by the crown nut 52.

In operation, the bulb 15 having been filled with the liquid it is desired to use, the ring or band 25 is turned in such direction as to retract the stem 34 and cause the dilators 45 to be closely folded within their recesses, and the nozzle is inserted in the cavity to be irrigated. The band 25 is then rotated in the opposite direction so as to raise the rod 34, thereby extending the several dilators, the same fulcruming upon their stems in the openings 44, in the manner of levers, until the parts have been duly expanded. As the screw 33 is practically irreversible, the dilator arms will remain extended until the band be rotated reversely, during which time the bulb may be compressed, the liquid following through the base element 18, around the hub 31, passing through the main element 20 into the head 37, and thence outward through the perforations 39.

The walls of the cavity are thus held away from the perforations and from the sides of the nozzle so that the liquid discharged through the openings can flow out, thereby effecting a thorough cleansing of the cavity.

In the modifications shown in Figs. 6 to 10 inclusive, the base element 60 of the nozzle is formed with thicker walls, the lower end being joined to the flexible bulb in the manner described, while the upper end is interiorly screw threaded and has fitted to it the end 62 of the cylindrical barrel 65.

A rounded head element 68 is formed integrally with the barrel 65 and is provided with perforations 69, and formed with lateral recesses 70, of the same general character as previously described.

The dilators 45 are neatly fitted within the recesses, but in place of passing through openings in the head, their lower inner ends 44 are pivoted upon pins 71 extending across the lower ends of the recesses which are en-

larged as shown at 76. Openings 72 are formed through the extreme ends of the dilators to receive hooks 73 on the ends of the rods 75, the dilator ends and hooks working in the enlarged ends of the main recesses 70.

The rods 75 extend longitudinally of the nozzle through bores in the internal, longitudinal raised ridges 78, formed integrally with the barrel 65. The lower ends of the rods 75 extend into recesses 80, and are connected with lugs 79, formed on a sliding collar 81 by means of nuts 82 and 83 threaded on the bars upon opposite sides of the collar 81, so that when the collar is moved longitudinally on the nozzle tube the rods will operate the dilator levers, to fold or extend them, as indicated in Fig. 7.

In Figs. 11 and 12 there is shown a further modified form of nozzle, the principal feature of which is a novel arrangement of the arms to distend the entire cavity without altering the position of the nozzle. To this end there are provided two sets of expanding arms, an outer set 46^a corresponding in position with the arms 45 of the first described construction. These arms may be of the same style as the arms 45 but as here shown the arms 46^a are pivoted at their upper ends directly to the wall of the tube 20^a as shown in Fig. 12, the nozzle being formed at this point with four bifurcated ears or ridges 82 through which the ends of the arms project into the interior of the nozzle, the pivot pins of the arms extending across the ears.

The end of the nozzle is of the full diameter of the tube, but at the ears 82 and below the nozzle is of reduced cross section, as indicated at 83, the surface of the reduced section corresponding with the shape of the contacting faces of the arms so that the latter will lie, when in contracted position practically within the periphery of the tube.

The inner ends of the arms project between collars 84 on the end of the rod 34^a within the tube and adapted to be adjusted back and forth longitudinally of the tube to expand and contract the arms by a suitable mechanism not shown, but which may be similar to the mechanism disclosed for the purpose in Fig. 1.

Below the ends of the arms 46^a there is a short section 85 of tube, of the full diameter, and then a second reduced portion similar to the portion 83 but shorter for receiving a second but smaller group of arms 87. The arms 87 are pivoted in the tube wall in the same manner as the arms 46^a and their inner ends are similarly engaged by collars 88 on the rod 34^a for actuation simultaneously with arms 46^a.

The arms 46^a and 87 are positioned with relation to each other so as to expose the entire surface of the vaginal cavity, when the arms are extended, to the spray and the outflow of the liquid. The lower group of arms are preferably made smaller than the upper arms to accommodate themselves to the inverted conoidal shape of the cavity.

The tube of this form of the device will also be made preferably in sections, joined together as at 89 and 90, to facilitate cleansing and sterilizing the nozzle.

In Figs. 13 and 14 I have shown a form of nozzle designed to direct the jest of the spray directly against the portion of the surface dilated by the arms so as to employ the force of the stream to the best advantage in cleansing the surface.

As here shown, the tube 20^b is of substantially uniform diameter from end to end and the dilators 46^b are supported at the end of the tube to form in effect a longitudinal extension of the tube when in their contracted position. The dilator arms are hollow and perforated as shown, so that the arms themselves form the nozzle while the tube 20^b may be imperforate. In order that the arms may be adjusted to dilate the cavity the ends of the arms project into the nozzle through holes in the end of the nozzle tube, the holes being larger than the diameter of the corresponding portions of the arms and preferably lined with a compressible tubular packing 92 to allow a pivotal as well as a sliding movement of the arms, at the same time preventing too great leakage through the holes around their ends.

The arms are supported and adjusted by means of an interior rod 34^b similar to the rod 34 of the first described form, the arms being connected to the end of the rod by a four-armed cross head 91, to each arm of which one of the dilators 46^b is pivoted as shown. The rod 34^b is adjusted back and forth longitudinally of the rod by any suitable mechanism, for instance, that shown in Fig. 1, to thereby adjust the dilators from their full line to their dotted line position and vice versa, as will be readily understood.

In using this form of the apparatus it is advantageous to partially withdraw the nozzle while maintaining the flow so as to successively dilate and cleanse different portions of the cavity.

Instead of pivoting the dilators to the nozzle tube as heretofore shown, they may be of the construction illustrated in Figs. 15 and 16. As here shown, the dilators 46^c are mounted in the tube wall for projection radially outward in a plane transverse to the axis of the tube 20^c. Each arm is substantially T-shaped comprising an enlarged rounded head slightly arcuate to fit in a groove formed in the periphery of the tube 20^c and a shank 93 projecting into the interior of the tube through a hole in the bottom of the groove. The ends of the arms are all pivoted to a disk 94 attached to the end of a

rod 34^e mounted for rotation in the center of the tube. The rod passes through a bearing formed in a transverse web 95 across the tube just below the groove, the web being perforated as shown to permit the passage of the liquid to the perforated end of the nozzle.

The ends of the shanks 93 of two opposite arms are extended across the upper face of the disk and pivoted thereto near the opposite edge, while the shanks of the other two arms extend under the disk and are attached in the same manner to the opposite edges of the disk, the shanks being curved as shown, to embrace the rod 34^e.

The arrangement of the arms is such that a half turn of the rod to the right or in the direction of the arrow, as shown in Fig. 16, will cause all the arms to be projected to their expanded position where they will remain until retracted by the reverse rotation of the disk. The points of attachment of the shanks 93 of the arms to the disk are positioned with respect to the axis of rotation of the rod 34^e so as to produce a toggle action, holding the arms against contraction through pressure on their heads until the disk is positively rotated by the rod.

The rod 34^e is rotated from a ring 25^e similar in all respects to the ring 25 of Fig. 1 and provided with an arm or sector 24^e projecting into the bore of the nozzle and across its center. At the center the sector is provided with a square hole for receiving the squared end 96 of the rod 34^e whereby the rotation of the ring will be imparted to the rod.

Instead of using a bulb for the liquid, as shown in Fig. 1, a tube connection such as shown at 95′ may be employed.

In Figs. 17, 18 and 19 I have shown a somewhat modified form of the type of nozzle shown in Figs. 15 and 16, the principal features being the arrangement of the dilators to engage the wall of the cavity throughout its entire circumference instead of at separated areas, as in the other forms. To this end the dilators 46^d which are also of T-shape, have their heads overlapping, as shown more particularly in Fig. 18, so that when the arms are expanded as shown in Fig. 19, the heads of the arms will form in effect a continuous ring of about twice the diameter of the nozzle tube.

The construction of the arms and their expanding devices is quite similar to that shown in Figs. 15 and 16. Each arm, of which there are six, has a shank 97 projecting through a hole in the wall of the tube 20^d, the ends of the shanks being pivoted to the opposite edges of the disk 99 at the upper end of the rotating rod 34^d. As there are three arms for each face of the disk, it is not possible to connect them all flat against the disk in the manner shown in Fig. 16. The shank of one arm is therefore connected flat against the disk on each side and the shanks of the other two arms on each side are connected to the disk through brackets or hangers 100 attached to the edge of the disk so as not to interfere with the shanks of the arms, each hanger 100 having pivoted to it the free end of one of the dilators so that the six arms will be operated simultaneously upon rotation of the rod 34^d. Instead of providing the arms with rounded ends in the manner shown, each arm 46 may be provided with a roller 46′ in the manner shown in Fig. 20, thereby avoiding any sliding contact with the surface to be treated.

Instead of providing the arms with rounded ends in the manner shown, each arm 46 may be provided with a roller 46′ in the manner shown in Fig. 20, thereby avoiding any sliding contact with the surface to be treated.

Instead of molding a groove in the wall of the tube to receive the ends of the T-shaped dilators, the end portions may be thin and convex on their outer faces to closely embrace the tube when contracted and not present a shoulder or obstruction on its outer surface which would interfere with its operation.

While the several different embodiments of the invention present special features having their individual advantages as above described, they all have several features in common which contribute to the successful operation of a device of this kind. The dilators are arranged entirely within the cavity and the connections between the external operating member and the dilators are entirely within the outer periphery of the nozzle so that at the entrance there is nothing to irritate or cause reflex contraction of the sphincter muscle, which is not only injurious but interferes with the outflow of the liquid. Also, the shape of the dilators is such as to present a smooth and rounded surface of more or less extended area for contact with the walls of the cavity to avoid all danger of injury.

The construction is such that the nozzles may be readily cleansed and rendered sterile by immersion in boiling water or chemical solutions used for that purpose, and no special experience is required preliminary to their use.

While it is preferred to form the nozzle of hard rubber, moulded into the shape desired, no special material is demanded and it will be obvious that the shapes shown may be varied and modified without departing from the scope of the invention as set forth in the appended claims.

It is also to be understood that while the nozzles are designed particularly for vaginal

douches, they may obviously be used for other purposes, and the invention is not limited to such special use.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. A douche nozzle comprising a tubular shank-portion forming a smooth surfaced sheath for protective contact with the mouth of the organ to be irrigated; an inward extension from said shank-portion in part constricted in cross-section serving as a fluid-duct, having fluid-discharge openings and a protective bulbous end; a set of dilators movably mounted solely at their ends to open and close in the locality where said inward extension has a constricted cross-section and mounted to lie wholly within the organ to be irrigated; means completing a fluid passage from outside of said shank-portion through said shank-portion, said inward extension and out against the walls of the organ to be irrigated where said organ is being dilated by said dilators; actuating means for said dilators carried by said shank-portion and located wholly without the organ to be irrigated; and means completing an operative connection between said actuating means and said dilators located within said shank-portion and out of contact with the walls of the organ to be irrigated.

2. A douche nozzle comprising a tubular shank-portion forming a smooth surfaced sheath for protective contact with the mouth of the organ to be irrigated; a relatively fixed inward extension from said shank-portion in part constricted in cross-section serving as a fluid-duct, having fluid-discharge openings and a protective bulbous end; a set of dilators movably mounted to open and close in the locality where said inward extension has a constricted cross-section and mounted to lie wholly within the organ to be irrigated; means completing a fluid passage from outside of said shank-portion through said shank-portion, said inward extension and out against the walls of the organ to be irrigated where said organ is being dilated by said dilators; actuating means for said dilators carried by said shank-portion and located wholly without the organ to be irrigated; and means completing an operative connection between said actuating means and said dilators located within said shank-portion and out of contact with the walls of the organ to be irrigated.

3. A douche nozzle comprising a tubular shank-portion forming a smooth surfaced sheath for protective contact with the mouth of the organ to be irrigated; a relatively fixed inward extension from said shank-portion in part constricted in cross-section serving as a fluid-duct, having fluid-discharge openings and a protective bulbous end; a set of dilators movably mounted solely at their ends to open and close in the locality where said inward extension has a constricted cross-section and mounted to lie wholly within the organ to be irrigated; means completing a fluid passage from outside of said shank-portion through said shank-portion, said inward extension and out against the walls of the organ to be irrigated where said organ is being dilated by said dilators; actuating means for said dilators carried by said shank-portion and located wholly without the organ to be irrigated; and means completing an operative connection between said actuating means and said dilators located within said shank-portion and out of contact with the walls of the organ to be irrigated.

4. A douche nozzle comprising a tubular element having a perforate end, a plurality of dilators carried by said tube adjacent the end thereof, and means for actuating said dilators comprising an external member adjacent the other end of the tube and connections within the periphery of the tube between the said member and the dilators.

5. A douche nozzle comprising a tube of substantially uniform cross section from end to end, said tube having a perforated end, recesses in the outer wall of said tube near the perforated end thereof, dilators carried by said tube and normally lying within said recesses with their outer surfaces forming a substantial continuation of the periphery of the tube, means lying with the periphery of said tube for operating said dilators, and means at the opposite end of the tube and external thereto for operating said actuating means.

6. A douche nozzle comprising a tube having a perforated end, said tube having a plurality of recesses in its exterior wall adjacent said perforated end, a plurality of dilators movably supported in said recesses in position to lie wholly within the cavity to be irrigated, an actuating member for said dilators carried by said tube in position to lie without said cavity, and connections between said dilators and said member lying wholly within the periphery of said tube.

7. A douche nozzle consisting of a tube, a plurality of dilators movably supported on said tube in positions to lie wholly within the cavity to be irrigated, and means for actuating said dilators comprising a ring movably supported on the wall of said tube in position to lie without said cavity, and connections between said ring and said dilators, said connections lying wholly within the periphery of said tube.

8. A douche nozzle consisting of a tube, a plurality of dilators movably supported on said tube in positions to lie wholly within

the cavity to be irrigated, and means for actuating said dilators comprising a ring supported for oscillation on the wall of said tube, a part of said ring extending into the tube, and connections between said part of said ring and said dilators for effecting the actuation of the dilators upon oscillation of the ring.

9. A douche nozzle consisting of a tube, a plurality of dilators movably supported on said tube in positions to lie wholly within the cavity to be irrigated, and means for actuating said dilators comprising a ring movably supported on the wall of said tube in position to lie without said cavity for movement longitudinally of said tube, and connections lying wholly within the periphery of said tube for effecting the actuation of said dilators upon adjustment of said ring.

10. A douche nozzle comprising a tube, a plurality of dilators movably supported on said tube in position to lie wholly within the cavity to be irrigated, said dilators being arranged in two sets at different points longitudinally of the tube, an actuating member for said dilators carried by said tube in position to lie without said cavity and connections between said dilators and said member lying wholly within the periphery of said tube.

In testimony whereof I affix my signature.

JAY ROSE.